DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
690 Walnut Ave.St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-003163
Date Inspected: 29-Jun-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name: Wu Ming Cai and Zhao Chen Sun

CWI Present: ☑ Yes ☐ No

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: SAS and Tower Fabrication

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on sub-assembly Bays mentioned below;

Bay 2: 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed square edge machining of 8 -60mm thick x 400mm wide x 1010mm long plates marked P122(1pc), P220(1pc), P329(1pc), P236(1pc) and P234(4pcs), which appear to be stiffener were seen in progress. Cutting of 75mm thick plate with various size and shapes marked SA236(1pc), SA99(1pc), SA218(1pc) and P687(1pc) were seen in progress. Rolling machine and tower mock up 114M were both noted idle.

Bay 3: OBG side/bottom/edge panel
The QA Inspector randomly observed three ZPMC welder operators Lin Zhi Hong ID #062447 and Sun Ti Yu ID #054459 and Li Shu Liang utilizing the Flux Cored Arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with gantry mounted welding apparatus and a 1.4mm diameter electrode, filler metal brand Supercored 71H semi automatic to weld fillet between 6-WT(W18x46) rib stiffener to side panel SP562-001 weld joints 035/036, 039/040 and 043/044 using ZPMC Weld Procedure Specification (WPS) WPS-B-T-2123-3. QA Inspector Lizardo randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters.

This QA was called by one of the ABF QA Inspector to confirm the existence of 11 cracked tack welds on

6-WT(W21x57) rib stiffener to bottom panel BP194-001. Although one of the 11 suspected cracked tack welds is obvious, there was a need to confirm the rest with better method and that is Magnetic Particle Testing. ZPMC QC called for NDE to conduct MT on these suspected tack welds but there was no available at that time. ZPMC personnel decided to grind/remove said tack welds and then do the MT after their removal. This QA randomly observed the ground/removal of all 11 tack welds and MT thereafter. See photo below.

Bay 4: Tower Diaphragm
This QA Inspector randomly observed one ZPMC welder Li Meng Qian ID #054460, utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly SSD1-SA322 A/B weld joints 11B. The QA Inspector randomly observed ZPMC CWI Zhao Chen Sun monitoring weld parameters.

This QA observed preheating of fillet weld connection between tower diaphragm plates to diaphragm flange SSD1-SA335-8 using corner thermal blanket despite noted gap of 7.5mm on one corner of the connection. Later during the day when preheat was already up to temperature, two ZPMC welders have started fillet welding. Also on another tower diaphragm plate to diaphragm flange fillet connection SSD1-SA27 A/B-8, tack welding started despite 7.0mm gap noted. ABF QA Inspector Man Kam Hon informed this QA that he is recording the gaps between the flange and plate on the above mentioned fillet weld connection and that ZPMC might ask for a revision on the working WPS for this. See photo below.

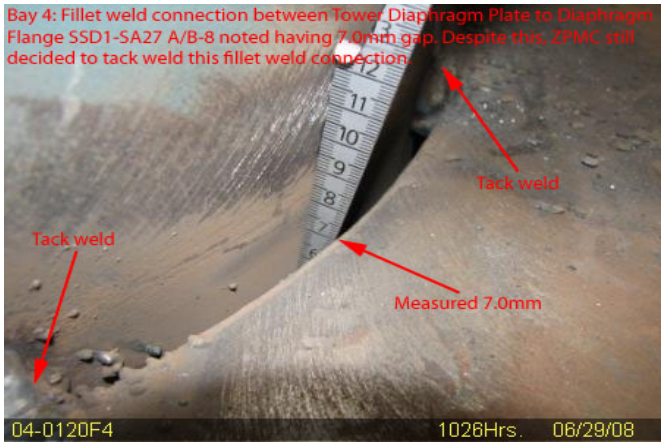
Heat straightening was also observed on deck panel DP010(A)-001 weld joints 001~006 and 008~010, edge panel EP056(A)-001 weld joints 003~006 and EP042(A)-001 weld joints 004~007 due to welding distortion. Oxy-acetylene gas was used and less than 650*/600 degree C thermal heat input was implemented following procedure HSR1(B)-1375*, HSR1(B)-1377 and HSR1(B)-1376 respectively. Bending of heavy plates/pushing the flange to close the gap (between the plate and flange)using natural gas with less than 600 degree C thermal heat input and with the aid of 50Ton hydraulic ram following procedure HSR1(T)-2489 this QA observed.

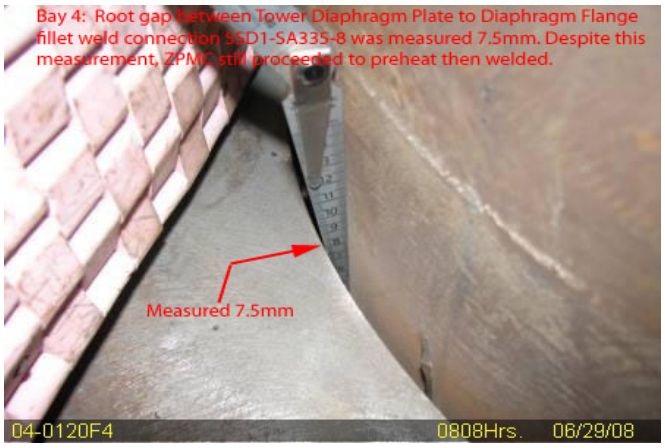
Bay 7: OBG - Floor Beam Sub Assembly
QA Inspector J. Lizardo randomly observed two ZPMC qualified welder Liu Kai Ge ID #044830 and Hong Shuili ID # 044815 groove welding repair on (flange to web plate) tee joint due to UT reject. Mr. Liu and Mr. Hong were observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1. 4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic at floor beam FB012-009-043 and FB016-011-043 and following welding repair report B-WR482 and B-WR481 respectively. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS) WPS-345-FCAW-2G(2F)-REPAIR-1.

Bay 8: Tower Diaphragm
This QA Inspector randomly observed two ZPMC welder Xie Chunfu ID number 045236 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly ESD1-SA316 A/B-7A. The QA Inspector randomly observed ZPMC CWI Lvliqing monitoring weld parameters. The QA Inspector also randomly

monitored weld parameters and recorded them as follows: 216 amps, 26.2 volts with travel speed of 115mm/minute. Weld parameters appeared to comply with contract requirements.

FCAW fillet welding (2F) was observed on stiffener to web plate of longitudinal shear plate LD010-004-003. ZPMC welder working on this was identified as Yun Chuanshan ID #050316. ZPMC CWI Hu Wei Qing was noted monitoring the parameters. SMAW tack welding was also noted on floor beam plate (18mm thick) splice butt joint of FB037-001-080 using 4.0mm diameter, THJ506Fe electrode.





Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cochran,Jim	QA Reviewer